

Applicants relied on data presented in the Application as filed to show that the combination of stain removing agents, when prepared in accordance with the requirements of the present claims show stain removing results surprising and not expected from the teachings of the prior art.

These results were criticized because the examples in the Specification show one stain removing agent in the coating and one allegedly intermingled with the gum base. The Advisory Action states that the Specification discloses that the stain removing agents are added to the chewing gum to obtain a homogeneous mixture and that it is not clear how the Applicant is inhibiting the stain removing agent from binding to the gum base. It is further stated that the ways of preventing the stain removing agents from being materially bound to the gum base do not appear to be used in the examples where Applicant asserts unexpected results. This ground of rejection is respectfully traversed.

The claimed invention as currently restricted is directed to a chewing gum composition comprising a gum base and a stain removing effective amount of at least two stain removing components selected from a peroxide compound, a polyphosphate, and an anionic surfactant. These stain removing components are not mixed directly with the gum base, and therefore are not materially bound to the gum base.

The present Application makes it clear how the stain removing agents are not materially bound to the gum base. One way in which this is accomplished is by placing

the stain removing agents in an area of the gum that is not occupied by the gum base. In particular, the stain removing agents can be placed in the coating, while the core of the chewing gum contains the gum base. Another example is a center-fill type of chewing gum composition, where the center-fill is typically a liquid or semi-solid containing sweeteners, flavorings, and the like. The center-fill does not contain gum base. Therefore, gum base appears in the coating of the center-fill chewing gum composition. The stain removing agents can therefore be placed in the center-fill, which is a portion of the chewing gum where the gum base does not appear.

Most chewing gum compositions contain a core made principally of chewing gum base. In accordance with the present invention, the stain removing agents can be placed in the core, but must be done so in a manner not taught by the prior art. In this embodiment of the invention, care must be taken to not mix the stain removing agents directly with the gum base. The phrase "not directly with the gum base" means that the stain removing agents are added as one of the last steps in producing the core of the chewing gum composition.

Attention is directed to Example 4, beginning on page 38 of the present Application. This example shows the preparation of three chewing gum compositions: Compositions 1 and 2 incorporate all three categories of stain removing agents, while Composition 3 includes two of the three categories of the claimed stain removing agents.

As indicated at the bottom of page 38, the chewing gum compositions in which the complete list of ingredients are shown in Table 2, were prepared by conventional methods known in the art. That is, the gum base was first heated to its softening point, and thereafter, the molten gum base was combined with the filler and added to a mixing kettle. Additional ingredients, including sugar alcohols, glycerin (softener), flavorants, and high-intensity sweeteners were added. As specifically indicated in the first two lines of page 39, the stain removing agents were added last.

The Advisory Action relies on the statement that a homogeneous mixture of gum base was formed, and therefore the stain-removing agents were incorporated directly to the gum base. This is an incorrect interpretation of the example, and is at odds with the clear teaching of the present Application.

As indicated above, the process for preparing the chewing gum composition of Example 4 begins with heating the gum base to a molten condition and then adding the filler. When the gum base and the filler are mixed, the filler is completely surrounded by the gum base. In other words, it is the filler that is directly mixed with the gum base. Thereafter, several other ingredients are added (typically sequentially) and the composition undergoes more mixing. As each ingredient is added, more and more of the composition contains an increasing percentage of additives, so that as additional ingredients are added to the composition, they have less and less contact with the gum base because of the presence of the other ingredients that were added sequentially.

In the embodiment of Example 4, the stain removing agents are added in the last step of the process. That means that the stain removing agents are added to the gum base composition when it contains a significant amount of other materials besides the gum base. Accordingly, less and less of the gum base is available to materially bind to the stain removing agents. As a consequence, the stain removing agents are only loosely contained within the gum base, because there is much less surface area of the gum base present to bind the stain removing agents. It is this phenomenon that enables the stain removing agents to be released from the chewing gum composition in amounts effective to perform a stain removing function.

The reference to "homogeneous mixture" in Example 4 does not mean that the stain removing agents are materially bound to the gum base. Because the stain removing agents are added as one of the last steps (in Example 4 they are added as the last step), formation of a homogeneous mixture still provides for the stain removing agents to be in far less contact with gum base than would be the case if the stain removing agents were added at the beginning of the process.

The prior art was completely unaware of this phenomenon. The prior art did not recognize multiple stain removing agents, if incorporated into the chewing gum composition as described above, could perform a significant stain removing function even in those situations where the stain removing agents were incorporated into a gum base-containing core.

A material feature of the claimed invention is the discovery that if the combination of stain removing agents can be made available in the oral cavity to perform a stain removing function, their effect would exceed the use of a single stain removing agent, or those compositions where singular materials are bound to the gum base. With regard to the stain removing agents themselves, Applicants acknowledge that polyphosphates and peroxide have been used individually. However, Applicants' combination of multiple stain removing agents and the manner in which they are placed in the composition achieves results beyond that which are obtained from the use of individual stain removing agents.

The Examples in the Specification support the Applicants' discovery and meet the §112 criteria for patentability. More specifically, Example 1, beginning on page 31, discloses the preparation of test solutions of individual stain removing agents and combinations of stain removing agents, and their ability to remove stains. Table 1 shows the stain removing capability of both single and multiple stain removing agent solutions and the higher stain removing effect utilizing the latter.

Example 2 again shows the use of test solutions to compare the stain removing effect of single and multiple stain removing agents. These results are shown in Figure 1. As clearly indicated in Figure 1, the combination of 0.3 % CP (carbamide peroxide) and .05SS (sodium stearate) far exceeds the stain reduction properties of the individual components. More specifically, the .05SS test solution shows an approximate 65% stain reduction, while the .3% CP shows an approximate 25% stain reduction. One

would therefore expect that when the two agents were combined, a 90% stain reduction would be achieved. Instead, the combination achieved approximately 150% stain reduction. This example clearly shows that the combination of two stain removing agents in accordance with the present invention exceeds the stain reduction efficiency of the individual stain removing agents when those agents are used in the same amounts as used in the combination. There is nothing in the prior art that teaches or suggests this result. Furthermore, the test solutions are indicative of corresponding results when the stain removing agents were placed in chewing gum compositions. In particular, if chewing gums were prepared with the individual stain removing agents and compared with the chewing gum prepared with both stain removing agents, then one would expect that the same amounts of the stain removing agents would be released into the oral cavity. The test solutions of Sample 2 show that the combination of stain removing agents achieves a stain removing effect not expected when compared to the results achieved when only one stain removing agent is used.

Example 3 is directed to the preparation and testing of 5 coated gum samples. Samples 2-5 show multiple stain removing agents in which one of the stain removing agents is in the coating portion, while one or two stain removing agents are in the core portion. The Advisory Action contends that the results indicated by Applicant shows one stain removing agent in the coating and one intermingled in the gum base. This statement is inaccurate because in two examples, the core portion contains two stain removing agents. Furthermore, the results in Example 3 are consistent with the

surprising and unobvious nature of the stain removing effect when multiple stain removing agents are used.

The claims of the present Application have been rejected as anticipated over Day. Day discloses a polymeric surface active agent in the form of a polyphosphate. Page 6 indicates that the particulate polyphosphate materials should be evenly distributed throughout the gum base. There is no teaching or suggestion in this reference of the problems associated with placing polyphosphate in that portion of the gum composition where the gum base is located. Day does not provide any recognition whatsoever that placing the polyphosphate in the gum base by adding the same directly to the gum base will impede the release of the polyphosphate to perform a stain removing function.

As previously indicated, Applicants have acknowledged that Day teaches that the polyphosphate may be incorporated into a coating where gum base is not present. However, this is the only stain removing agent that is clearly provided for in the coating.

Day states on page 8, lines 22-24 that softeners can be employed in chewing gum compositions and that suitable softeners include sodium stearate, potassium stearate, and glycerin. As Applicants have previously explained, sodium stearate and potassium stearate are preferred anionic surfactants employed in the present invention as stain removing agents. Applicants have maintained that the prior art has used anionic surfactants such as sodium stearate and potassium stearate as softeners, which

are directly mixed with the gum base. These substances are directly mixed with the gum base, because their purpose is to soften the gum base and make it more chewable.

Day equates sodium stearate and potassium stearate with glycerin. In the examples beginning on page 12, glycerin is employed as a softener in all of the samples. In the instructions for making the chewing gum composition beginning on page 14, glycerin is added very early to the gum base in order to provide a softening effect. Glycerin is added early so that it will have substantial contact with the gum base in order to provide the softening effect. To the contrary, Applicants' examples show the addition of stain removing agents as one of the last steps in the production of the chewing gum composition in order to minimize the contact of the stain removing agents and the gum base. It therefore follows that sodium stearate and potassium stearate used in Day is for the purpose of softening the gum base and is therefore added in a manner which does materially bind to the gum base.

Page 11, lines 26-31 of Day provide a list of conventional ingredients which may be incorporated into a chewing gum composition. As shown in the examples, none of these agents are added in a manner which would insure that they would not materially bind to the gum base. Furthermore, the reference makes no mention of the need to avoid direct addition to the gum base. It is therefore submitted that the present claims are neither anticipated nor rendered obvious by Day.



Miskewitz discloses a chewing gum product that includes encapsulated sodium bicarbonate and a peroxygen compound. The Advisory Action refers to Column 3, lines 61-67, stating that a conventional chewing gum base usually contains fillers, softeners, plasticizers, and emulsifiers. The Advisory Action states that surfactants of the reference are distinct from softeners, plasticizers, and emulsifiers. This ground rejection is hereby traversed and reconsideration is respectfully requested.

As we have previously shown from a discussion of Day, conventional softeners include sodium stearate and potassium stearate, which are anionic surfactants used in the presently claimed invention. Miskewitz lists glycerin and lecithin as softeners, which may be used to enhance the chewability and mouthfeel of the chewing gum (Column 5, lines 59-63). Examples III, IV and V of Miskewitz show the addition of glycerin early on in the process of making the chewing gum composition. The purpose of adding glycerin is to soften the gum base, and therefore glycerin must be incorporated early on in the process. Glycerin is the equivalent of sodium stearate and potassium stearate, as employed in the Miskewitz disclosure because they function as softeners. It is further noted from these examples that the peroxide component (sodium percarbonate and urea peroxide) are also added early on in the process.

Anionic surfactants referred to in Miskewitz are added to enhance the compatibility of the ingredients in the chewing gum product and to enhance flavor (Column 6, lines 42-53). None of the examples provided by Miskewitz shows the addition of an anionic surfactant, and therefore one must assume that they are also

added early on in the process, along with other conventional ingredients. There is no teaching or suggestion in this reference of adding the anionic surfactant as one of the last steps in the process or the beneficial effects achieved thereby.

It is therefore submitted that Miskewitz is typical of those prior art references that show a variety of different ingredients in combination. At no time is there any teaching or suggestion of how to incorporate Applicants' stain removing agents into the chewing gum composition to provide for the surprising and unobvious release of the stain removing agents into the oral cavity. There is also no teaching or suggestion of combining two or more of Applicants' stain removing agents, as compared to only one of these agents. The fact that Miskewitz did not recognize any surprising or beneficial effect of multiple stain removal agents is a clear indication that no such beneficial effect was achieved, because of the manner in which the referenced chewing gum composition was formulated.

Applicants acknowledge the citation of Sagel and Cherukuri. As indicated in the Advisory Action, these references are cited to show encapsulation of the peroxide, and to show that center-fill chewing gums are known in the art. Applicants submit that these references do not provide additional teaching or motivation for one of ordinary skill in the art to materially change the composition of the primary references to arrive at the claimed invention. Therefore, for the reasons presented with respect to Day and Miskewitz, the rejections based in part on Sagel and Cherukuri likewise should be withdrawn.

In view of the forgoing, Applicants submit that the present Application is in condition for allowance, and early passage to issue is therefore deemed proper and is respectfully requested.

Respectfully submitted,



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